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The KM3NeT underwater neutrino telescope: status and future perspective

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The KM3NeT collaboration started to build a multi-km³ neutrino telescope in the Mediterranean Sea. The telescope is composed of the ARCA detector, optimised for searches for high-energy neutrino sources in the Universe and it is under construction at the Capo Passero site, Italy, 80 km offshore at a depth of 3500 m; and the ORCA detector, near Toulon, France, 40 km offshore at a depth of 2500 m, aimed at the determination of the mass hierarchy of neutrinos. The basic detection element of the KM3NeT detector is the Digital Optical Module. The module is a pressure resistant glass sphere, containing 31 photo-multiplier tubes. Eighteen modules are arranged in the Detection Unit, a vertical string anchored on the sea floor. The Detection Units are deployed on the seabed to form a three-dimensional array of optical modules to detect Cherenkov light produced by neutrino-induced particles. In this contribution, an overview of the latest results and the future perspectives for the KM3NeT telescopes to detect the high energy neutrino sources in the Universe with the ARCA telescope and to determine the properties of the elusive neutrino particles with ORCA detector are presented.

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